

# Wallpaper Dilemma

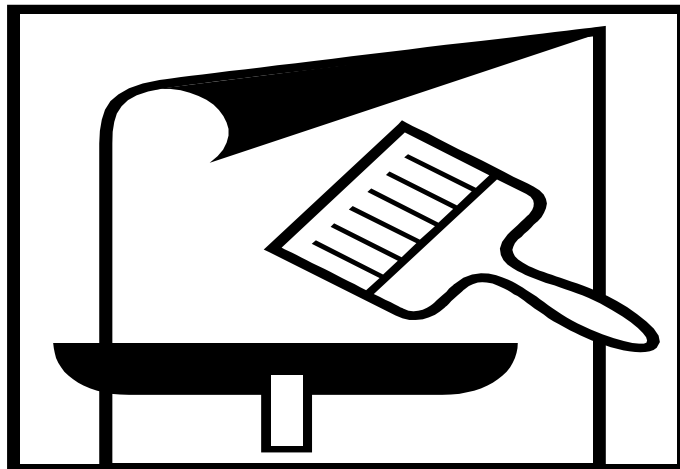
High School

Math Performance Event

by

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## Wallpaper Dilemma

**Purpose:** This performance event is intended to be used as a culminating and /or extension activity following a series of math lessons finding areas of 2-dimensional shapes. The task will allow students to demonstrate their ability to find areas for various shapes with varied dimensions. Additionally, the event requires students to estimate, use computational skills, and explain the process. The explanation is assessed for both content and its ability to clearly convey meaning to others.

### **Show-Me Standards Addressed:**

Knowledge: M1, M2

Performance: 4.1, 2.1

**Grade Level Range:** 10 - 12

**Subject Area:** Math

**Materials and Resources Needed:** pencil, ruler, calculators (optional), Performance Event Packet which includes the Student Prompt and Scoring Guide, Room Dimensions, Wallpaper Fact Sheet and Estimation Sheet.

**Time Needed for Event:** 45-60 minutes

**Instructions for Administration:** Provide each student with a performance Event Packet containing the necessary sheets. Read the student prompt aloud so every student understands what he/she needs to do. Present the scoring guide and go over each criteria to be assessed so students know what is expected for a quality performance. Explain how to use the Room Dimension Sheet, the Wallpaper Fact Sheet, and the Estimation Sheet.

**Pre-assessment Instructions:** The teacher should have a pre-assessment activity that explains to the student the wallpapering facts contained in the task.

## Student Prompt

### Wallpaper Dilemma

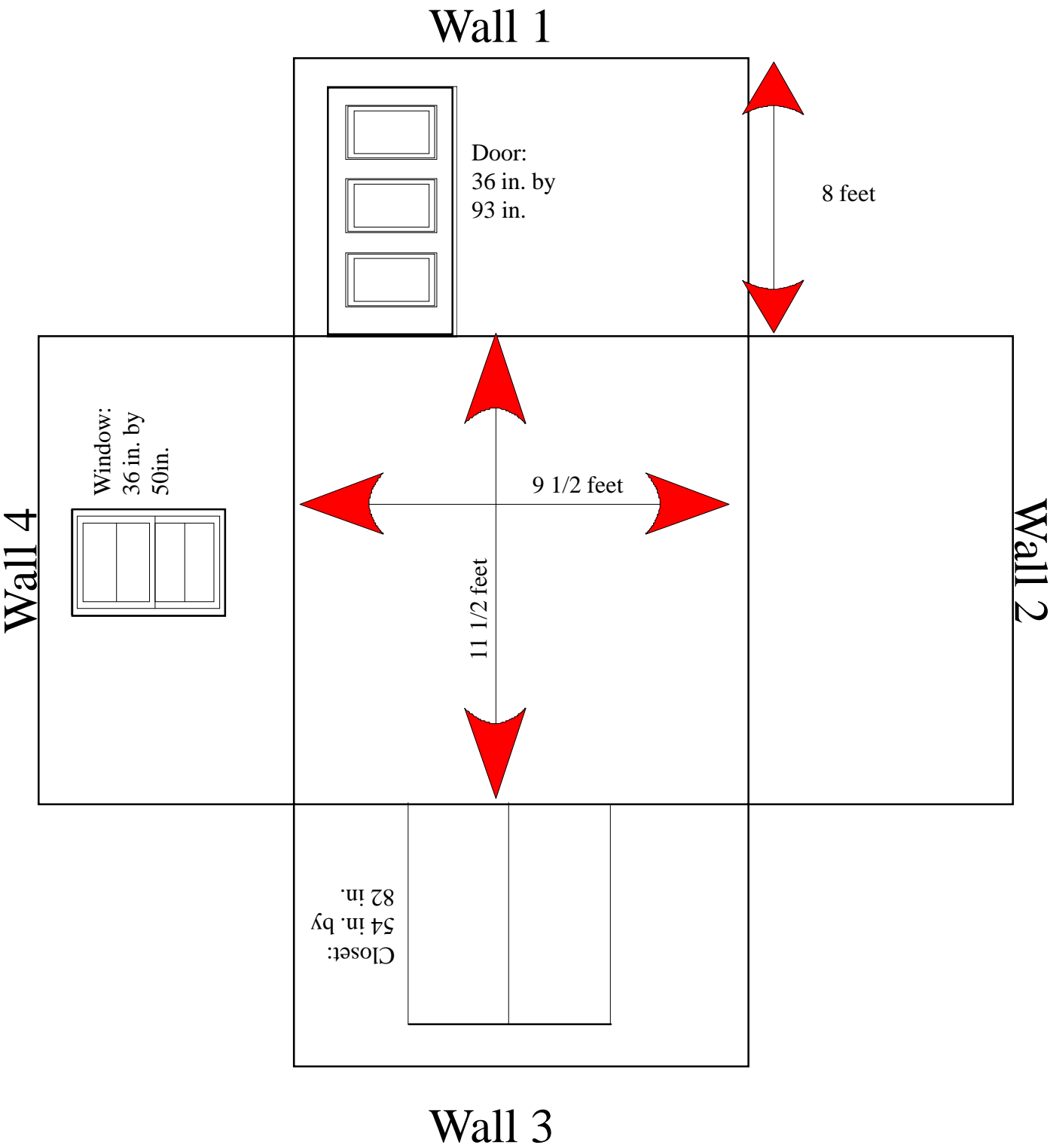
Mrs. Brown, your neighbor, has asked for your assistance. She wants to wallpaper her bedroom and has asked you to figure how many rolls of wallpaper she will need and the total cost.

Mrs. Brown has chosen to use gray wallpaper on the top half of the room, floral wallpaper on the bottom half of the room, and a floral border half-way up around the entire room.

Use the information given on the next two pages to figure how many rolls of both types of wallpaper and how many rolls of border she will need to buy. Use these figures to find the total cost.

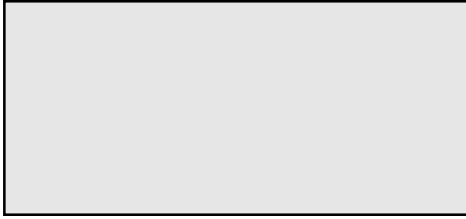
After you have made the needed calculations, use the Estimation Sheet to present Mrs. Brown with your findings. Be sure to explain how you arrived at your estimated price.

# Room Dimensions

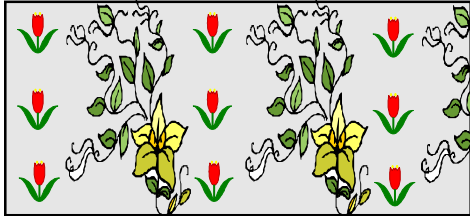


Note: Height of all 4 walls = 8 feet  
Floor molding = 3 inches

# Wallpaper Facts



Light gray wallpaper to be used on the top half of the room. Size of one roll: 20.5 inches by 33 feet. Cost \$12.50 per roll.

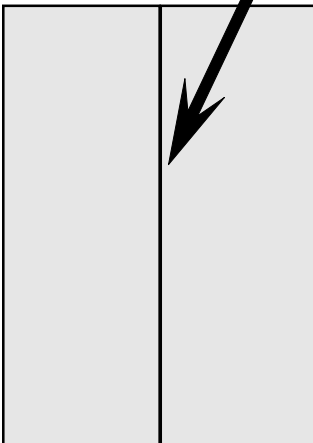


Floral wallpaper to be used on the bottom half of the room. Size of one roll: 20.5 inches by 3 yards. Cost \$15.00 per roll.

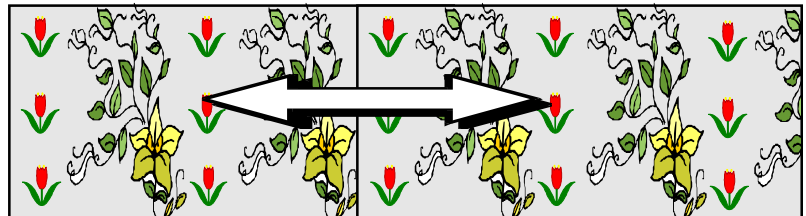


Border to run horizontally around the room where the gray and floral paper meet. Size of one roll 3 1/2 inches by 5 yards. Cost per roll \$8.00.

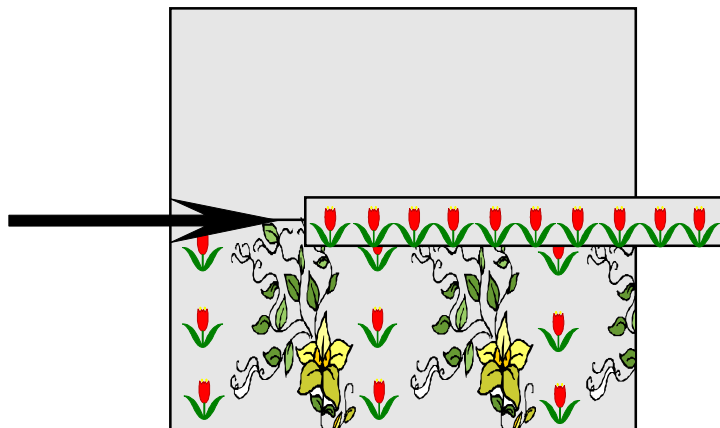
Seams are to be butted (fit next to each other and do not overlap.)



The gray and floral paper both have a straight match ( design flows directly across strips, so no extra paper is need to align the pattern).



The gray and floral paper meet in the middle of the wall. The border is places on top of the butted seam.



# Estimation Sheet

Figure the number of rolls of both types of wallpaper and border needed to wallpaper the room.

Figure the total cost of all the wallpaper.

Write the process you used to figure the number of rolls needed and the total estimated cost.

# Scoring Guide

## 4 Points

- \* The estimated amounts and total cost are reasonable.
- \* The estimation sheet clearly and concisely summarizes the student's findings so that the reader knows immediately the number of rolls of both types of wallpaper and border needed to paper the bedroom and the total cost.
- \* The student's explanation of the steps in the process is clear, accurate, complete, and logical.
- \* One understands from the explanation exactly how the student determined the number of rolls needed and the cost.

## 3 Points

- \* The estimated amounts and total cost are reasonable.
- \* The estimation sheet summarizes the student's findings from which the reader can determine the number of both types of rolls and the border needed to paper the bedroom and the total cost.
- \* The student's explanation of the steps in the process is generally complete and, for the most part, logical, although it may be difficult to understand what the student did at one or two points in the process.
- \* One can generally determine from the explanation of the process how the student found the number of rolls needed and the cost.

## 2 Points

- \* The student's estimations may or may not be reasonable.
- \* The estimation sheet may include a student's statements of findings that are difficult to follow; the student may have incorporated the estimates into the description of the steps of the process.
- \* The student's explanation of the steps in the process may be general and lacking in detail; may be difficult to follow or may appear somewhat illogical.
- \* The student may have omitted information that would have helped the reader understand what was done or may have addressed only the number of rolls needed or the cost.

## 1 Point

- \* The student's estimations may be incomplete or unreasonable.
- \* On the estimation sheet, the student's work may be poorly organized and impossible to understand without a great deal of effort; some of the estimates may have been omitted.
- \* The student's explanation of the steps in the process may be completely illogical or extremely difficult to follow.
- \* The student may have omitted key information necessary to understand what was done.

## 0 Points

- \* There may be no response to the item, the student's work may be impossible to read and understand, or the student's work may show no relationship to the problem.